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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/755,015	01/09/2004	Munmaya K. Mishra	EI-7616	7752

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EXAMINER	
LANG, AMY T	

ART UNIT	PAPER NUMBER
1714	

DATE MAILED: 08/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/755,015	MISHRA ET AL.	
	Examiner	Art Unit	
	Amy T. Lang	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-32 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-32 is/are rejected.

7)☒ Claim(s) 19-26 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 1/9/2004.- 04/03/06 - 02/03/06
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

0DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: page 6, line 11 of the specification includes the phrase "polymers may contains," where it is the examiner's position that "contains" should be replaced with "contain."

Appropriate correction is required.

2. The disclosure is objected to because of the following informalities: page 8, line 2; page 9, line 1; and page 11, line 1 all have misspelled words where an "e" is missing in the words N-p-diphenylamine, 4-hydroxydiphenylamine, and derivatives.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: claim 26 defines a method for making a graft copolymer when no method steps are disclosed.

5. Claims 19-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 19-25 disclose a "sufficient amount of the graft copolymer," which does limit the scope of the claim to what suffices for a sufficient amount. Therefore, this claim is indefinite and does not properly define the subject matter which applicant seeks to claim.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-4, 6-12, 14, 15, 17, 18, 22, 26-29, and 31-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Kapuscinski (EP 0,461,774 A1).

Kapuscinski discloses a lubricant composition comprised of an additive which functions as a dispersant, antioxidant, and viscosity index improver (page 2, lines 1-2). This additive is comprised of a polymer backbone grafted with the reaction product of an unsaturated epoxide and an aromatic hindered amine (page 2, lines 43-46). The polymer backbone is further disclosed as ethylene-propylene copolymers, diene polymers, or copolymers of isoprene with styrene (page 4, lines 41-45). The unsaturated epoxide is further disclosed as glycidyl methacrylate and the hindered

amine as N-phenyl-1,4-phenylenediamine, which clearly overlaps the instantly claimed reaction product of glycidyl methacrylate with p-aminodiphenylamine (page 3, lines 39-43; page 4, lines 2-3).

The additive disclosed by Kapuscinski is then added to a base lubricating oil in amounts from 2 to 15 wt% (page 6, lines 2-4). The base oil includes natural and synthetic lubricating oil (page 5, lines 50-57). This composition, comprising a base oil and additive, is utilized to lubricate gas engines and internal combustion engines, which encompasses diesel engines (page 5, lines 53-57). The composition also includes other additives including other dispersants, detergents, antioxidants, and pour point depressants (page 6, lines 7-9).

Kapuscinski also discloses a method for preparing the additive that is carried out in a liquid solution and in the presence of a catalyst (page 2, line 37-38; page 3, lines 9-18; page 4, lines 29-33).

Kapuscinski does not specifically disclose (i) the graft polymer additive as a soot dispersant, (ii) the lubricating composition passing a Mack-T 11 test and (iii) peroxide as the catalyst in the grafting reaction.

With respect to (i) above, although Kapuscinski does not specifically disclose the additive as a soot dispersant, Kapuscinski discloses its function as a dispersant in an internal combustion engine. This additive would therefore also inherently function as a soot dispersant, since soot accumulation is common in internal combustion engines.

With respect to (ii) above, since the composition has the same structure as the additive in the instant claims, Kapuscinski's additive would inherently display the same results of viscosity increase and soot level in a Mack T-11 test.

With respect to (iii) above, Kapuscinski discloses free radical initiators, including peroxide, as an additive in the method to produce the composition (page 4, lines 34-36). These free radical initiators inherently function as catalyst in a grafting reaction.

8. Claims 1-5, 7, 26-28, 31, and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Mishra (US 5,135,996).

Mishra discloses a lubricating composition comprised of a viscosity index improver (column 1, lines 5-12, 57-60). The viscosity index improver is further disclosed as the reaction product of an ethylene-propylene copolymer backbone with 4-anilinophenyl methacrylamide (column 2, lines 20-39, 49-50). The backbone may also comprise diene polymers (column 2, line 66 through column 3, line 2).

The method to produce the viscosity index improver is also disclosed by Mishra, which is carried out in solution in the presence of a catalyst (column 3, lines 3-11; column 4, lines 25-57).

Mishra does not specifically disclose the composition comprising base oil, however, the composition is utilized as lubricating oil. Therefore, the composition inherently contains base oil in order to function as a lubricating oil.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claims 13, 16, 19-21, and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kapuscinski (EP 0,461,774 A1) in view of Ritchie (US 6,869,919 B2).

Kapuscinski, as discussed in paragraph 7 and incorporated here by reference, discloses a lubricating composition comprising an olefin polymer grafted with the reaction product of glycidyl methacrylate with p-aminodiphenylamine. This composition is used to lubricate the crankcase of an internal combustion engine.

Kapuscinski does not disclose (i) the composition as lubricating an internal combustion engine with an exhaust gas recirculation (EGR) system and (ii) a method to reduce soot-thickening of a lubricating oil, to improve fuel economy, to improve fuel durability, to give superior oil sludge performance, to give superior wear protection, or to extend the service time between oil drains.

With respect to (i) above, Ritchie discloses that many internal combustion engines comprise cooled exhaust EGR systems (column 1, lines 10-21, 38-43). These systems also comprise cooling the engine with air to form an air-exhaust mixture (column 3, lines 1-15). The motivation for using such a cooled exhaust EGR system and for the cooling the engine is to reduce NOx emissions, which is better for the environment and for power generation and fuel economy (column 1, lines 10-12, 26-27). However, EGR systemscause soot levels to increase until lubricating oils become adversely affected (column 1, lines 45-54). Therefore, Ritchie teaches that the EGR system requires a lubricant to be applied more frequently and preferably also contain specific additives, specifically dispersants and viscosity modifiers (column 1, lines 55-62).

In light of the above and given that Kapuscinski discloses a specific dispersant and viscosity modifier in a lubricating composition that works effectively in internal combustion engines, it would have been obvious to one of ordinary skill in the art to utilize Kapuscinski in an engine comprising a cooled exhaust EGR system wherein the engine is cooled using an air-exhaust mixture in order to reduce NOx emissions.

With respect to (ii) above, although Kapuscinski does not disclose the listed methods, however, since the composition as taught by Kapuscinski in view of Ritchie could be utilized in internal combustion engines comprising a cooled EGR system, it is the examiner's position that any of the listed methods which actually represent performance enhancing characteristics of the prior art compositions would be intrinsic to those compositions.

12. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kapuscinski (EP 0,461,774 A1) in view of Gutierrez (US 4,632,769).

Kapuscinski, as discussed in paragraph 7 and incorporated here by reference, discloses a lubricating composition comprising an olefin polymer grafted with the reaction product of glycidyl methacrylate with p-aminodiphenylamine. This grafting process is disclosed as containing the broadly defined step of mixing the two components (page 4, lines 55-58).

Kapuscinski does not disclose the grafting process using an extruder.

Gutierrez also discloses a lubricating composition comprised of an additive that is the product of an ethylene-propylene copolymer grafted with a carboxylic acid (column 1, lines 8-22). The grafting method is conducted in bulk in an extruder or masticator, which encompasses an intensive mixing device (column 5, lines 9-17). Therefore Gutierrez teaches that it is known to use these devices to conduct a grafting process. Since Kapuscinski utilizes a grafting process with the step of mixing, and Gutierrez also discloses the grafting process with an extruder or masticator, which mixing encompasses, it would have been obvious for Kapuscinski to also utilize the specific intensive mixing devices disclosed by Gutierrez.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy T. Lang whose telephone number is 571-272-9057. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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